

Information about *Dow Corning*[®] Brand Adhesive/Sealants

Silicones and Electronics

Archeological evidence shows that adhesives have been in use for over 6000 years, and many objects can be seen in museums that are still bonded with adhesives after 3000 years or more. While you may not need that extreme of long-term, reliable protection, you still want your adhesive to outlast your device.

While our track record may not be thousands of years old, we have been making adhesives for electronics almost since their inception. Many Dow Corning products have been in continuous use for 30 years or more and are still being applied today, testifying to the suitability of silicone adhesives for electronics. Silicones have long been known for durable dielectric insulation, as barriers against environmental contaminants and for their stress-relieving shock and vibration absorption. They can sustain their physical and electrical properties over a wide range of temperature, humidity and other harsh environmental conditions.

Developments over the years have allowed Dow Corning to add special properties to this durable material foundation in response to your needs. Some of the more recent developments include:

- Fast tack-free
- Lower volatility
- Faster or lower temperature cure
- Adhesion to difficult current and future substrates
- Less inhibition in heat-cure adhesives
- Curable pressure-sensitive adhesives

Some of the applications with special needs for which we are currently developing materials include:

- PDP and LCD terminal sealing
- Automotive electronics module and sensor sealing
- Power supply and SMPS adhering
- Electrical instrument adhering and sealing
- Circuit board laminating and adhering

Dow Corning[®] brand Adhesives are supplied in three product forms:

One-Part Moisture Cure RTV

Dow Corning one-part moisture cure adhesives are generally cured at room temperature and in a range of 30 to 80 percent relative humidity. Greater than 90 percent of their full physical properties should be attained within 24 to 72 hours depending on the product chosen. Materials and parts can be handled in much shorter times of about 10 to 120 minutes depending on the product chosen and the amount of material used per part. These materials are not typically used for highly confined or deep section cures. Materials will generally cure about 0.25 inch per seven days from any exposed surface. Cure progresses from the outer surface and is dependent on the moisture in the air. Working time is generally a few minutes to an hour for these products until a surface skin begins to form. Mild heat acceleration of the cure rate may be possible, but temperatures above 60°C (140°F) are not recommended.

Two-Part Room Temperature Condensation Cure

Dow Corning two-part RTV adhesives cure rapidly at room temperature after mixing. Good strength is attained within an hour but full properties are not reached for a number of days. These adhesives contain their own source of moisture, and cure progresses evenly throughout the material. Deep-section or confined cures are possible; however, some limitations exist. Refer to the “Reversion” section of this datasheet for additional information. Working time is only a few minutes.

Heat Cure

Dow Corning addition-curing adhesives should be cured at 100°C (212°F) or above. The cure rate is rapidly accelerated with heat (see cure schedules in table). For thicker sections or if voiding is observed, use of one of the newer low-voiding adhesives or a 30-minute pre-cure at 70°C (158°F) may reduce voids in the elastomer. Addition-curing materials contain all the ingredients needed for cure with no byproducts from the cure mechanism. Deep-section or confined cures are possible. Cure progresses evenly throughout the material. These adhesives generally have long working times.

Custom Solutions

Fast Formulation

Dow Corning manufactures a wide variety of adhesives to meet the needs of most application and process situations, and we are continuously expanding the product offerings in each of these families to ensure that there are products to meet your needs. However, if you cannot find a match for your needs, Dow Corning can modify any of our existing products to help meet your exact needs through our *Fast Formulation* process. A few examples of how *Fast Formulation* can help meet your exact needs include: modification of product cure schedule, modulus, viscosity or color, or adding/removing an inert intermediate such as UV indicator – all in a timely manner.

Total Support

Product Finder – Dow Corning features a unique interactive product finder on our website. This tool can help you pick the right materials for your applications; you can access the product finder at www.dowcorning.com/electronics and selecting “Technical Details” on any of our product family pages.

Production of Prototype Coated Boards or Process Design

We can produce sample parts, boards or test coupons and patterns for early evaluation of an adhesive’s abilities and adhesives can be applied simulating your own process. Based on our extensive industry experience, we can advise you on the best methods and conditions for your process.

Analytical, Environmental and Physical Testing

We have expertise to share on a wide range of testing to monitor quality, for specialized testing for trouble-shooting, or to simulate accelerated service conditions.

Equipment Recommendations

Over many years of providing materials for electronics protection, Dow Corning has developed strong alliances with key equipment suppliers worldwide. We have just launched the External Equipment Provider Alliance with nine leading companies. Save time and expense by taking advantage of these alliances to ensure the optimum integration of material and processing.

Consultation with Technical Experts

Have our experts visit your facility or join us at one of our global application centers to work together on your material and processing needs. We can provide seminars and training for your personnel to allow them to work more knowledgeably. With material, process and equipment integration solutions from Dow Corning, you can manufacture more modules and assemblies in less time, at less cost, with fewer shutdowns and fewer customer rejects.

Tutorials

An adhesive tutorial can be found on our web site. It is accessible from the product family pages or the left hand navigation bar under Technical Library.

Product/Application Information

PREPARING SURFACES

All surfaces should be thoroughly cleaned and/or degreased with *Dow Corning*[®] brand OS Fluids, naphtha, mineral spirits, methyl ethyl ketone (MEK) or other suitable solvent. Solvents such as acetone or isopropyl alcohol (IPA) do not tend to remove oils well, and any oils remaining on the surface may interfere with adhesion. Light surface abrasion is recommended whenever possible, because it promotes good cleaning and increases the surface area for bonding. A final surface wipe with acetone or IPA is also useful. Some cleaning techniques may provide better results than others; users should determine the best techniques for their particular applications.

ADHESION

Dow Corning silicone adhesives are specially formulated to provide unprimed adhesion to many reactive metals, ceramics and glass, as well as to selected laminates, resins and plastics. However, good adhesion cannot be expected on nonreactive metal substrates or non-reactive plastic surfaces such as *Teflon*[®], polyethylene or polypropylene. Special surface treatments such as chemical etching or plasma treatment can sometimes provide a reactive surface and promote adhesion to these types of substrates. *Dow Corning*[®] brand Primers (see “Primer Selection Guide”, page 12) can be used to increase the chemical activity on difficult substrates.

Poor adhesion may be experienced on plastic or rubber substrates that are highly plasticized, because the mobile plasticizers act as release agents. Small-scale laboratory evaluation of all substrates is recommended before production trials are made.

In general, increasing the cure temperature and/or cure time will improve the ultimate adhesion.

SUBSTRATE TESTING

Due to the wide variety of substrate types and differences in substrate surface conditions, general statements on adhesion and bond strength are impossible. To ensure maximum bond strength on a particular substrate, 100 percent cohesive failure of the adhesive in a lap shear or similar adhesive strength test is desired. This ensures compatibility of the adhesive with the substrate being considered. Also, this test can be used to determine minimum cure time or can detect the presence of surface contaminants such as mold release agents, oils, greases and oxide films.

USEFUL TEMPERATURE RANGES

For most uses, silicone elastomers should be operational over a temperature range of -45 to 200°C (-49 to 392°F) for long periods of time. However, at both the low- and high-temperature ends of the spectrum, behavior of the materials and performance in particular applications can become more complex and require additional considerations.

For low-temperature performance, thermal cycling to conditions such as -55°C (-67°F) may be possible, but performance should be verified for your parts or assemblies. Factors that may influence performance are configuration and stress sensitivity of components, cooling rates and hold times, and prior temperature history.

At the high-temperature end, the durability of the cured silicone elastomer is time and temperature dependent. As expected, the higher the temperature, the shorter the time the material will remain useable.

COMPATIBILITY

Certain materials, chemicals, curing agents and plasticizers can inhibit the cure of addition cure adhesives. Most notable of these include:

- Organotin and other organometallic compounds
- Silicone rubber containing organotin catalyst
- Sulfur, polysulfides, polysulfones or other sulfur-containing materials
- Amines, urethanes or amine-containing materials
- Unsaturated hydrocarbon plasticizers
- Some solder flux residues

If a substrate or material is questionable with respect to potentially causing inhibition of cure, it is recommended that a small scale compatibility test be run to ascertain suitability in a given application. The presence of liquid or uncured product at the interface between the questionable substrate and the cured gel indicates incompatibility and inhibition of cure.

MIXING AND DE-AIRING

Upon standing, some filler may settle to the bottom of the liquid containers after several weeks. To ensure a uniform product mix, the material in each container should be thoroughly mixed prior to use.

Two-part materials should be mixed in the proper ratio (1:1 or 10:1) either by weight or volume. The presence of light colored streaks or marbling indicates inadequate mixing.

Automated airless dispense equipment can be used to reduce or avoid the need to de-air. If de-airing is required to reduce voids in the cured elastomer, consider a vacuum de-air schedule of >28 inches Hg for 10 minutes or until bubbling subsides.

One-Part Moisture Cure RTV

Type

Noncorrosive, one or two-part moisture curing RTV silicone elastomers; cure at room temperature without the need for heat

Physical Form

Nonflowing and flowable options; cures to a flexible elastomer

Special Properties

Room temperature cure; opaque and translucent options; resists humidity and other harsh environments; good dielectric properties; good adhesion to a variety of common substrates; low stress, low volatility with some being fast tack-free; two-part materials can also offer rapid cure and green strength at room temperature and deep section cure

Potential Uses

Sealing modules and housings; gasketing; sealing of electronic equipment and modules; part fixing on circuit boards of power supply and CRT, LCD/LED/PDP module assembly, housing, gasketing, attaching electronic parts

Two-Part Room Temperature Condensation Cure

Type

Two-part RTV silicone elastomers

Physical Form

Nonflowing; cures to a flexible elastomer

Special Properties

Rapid cure and green strength at room temperature; deep section cure; resists humidity and other harsh environments; good dielectric properties; self-priming adhesion; low stress

Potential Uses

Lid and housing seals; gasketing

Heat Cure

Type

One- and two-part silicone elastomers provided in a wide variety of as-applied and as-cured forms

Physical Form

Non-flowing and flowable options; cures to a flexible elastomer; wide variety of cured forms and properties available

Special Properties

Fast thermal cure at lower temperature; resists humidity and other harsh environments; good dielectric properties; self-priming adhesion; low stress, less voiding during curing

Potential Uses

Lid and housing seals; seals for ECUs, power modules; fixing electronics parts to circuit boards; reinforcing or fixing parts of connectors; gasketing electronics parts/modules; sealing condensers and electronics components; fixing flyback transformers

PRODUCT INFORMATION

Dow Corning® Brand Product	Description	Features	Potential or Typical Uses
One-Part Moisture Cure RTV			
EA-3000 White	1-part, white, fast tack-free	Fast tack-free; low viscosity; noncorrosive (alcohol type RTV); excellent adhesion to most materials; self-priming; excellent dielectric properties; excellent thermal stability and cold resistance; low volatility	LCD & EL module assembly
SE 9120 Clear	1-part, flowable; translucent, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility	EL, LCD module assembly, hybrid IC and PCB coating, encapsulation of electrical devices
SE 9120 S White	1-part, flowable, white, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility	EL, LCD module assembly
SE 9152 HT	1-part, flowable, reddish brown, moisture cure RTV	Fast tack-free time; noncorrosive; heat resistance to 275°C	Sealing of sheathed heater terminations
SE 9186 Clear or White	1-part, flowable, translucent or white, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility	Sealing of electronic equipment and modules; parts fixing on circuit board
SE 9186 L Black or L Clear	1-part, flowable, black or translucent, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility	Parts fixing on circuit board; LCD module assembly
SE 9187 L Black or L Clear or L White	1 part, low viscosity, black, translucent or white, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility; UL 94HB (black only)	LCD module assembly; LED module assembly; potting
3140 RTV Coating	1-part, moderate flow, translucent, moisture cure RTV	Noncorrosive; good cured strength; contains UV indicator for automated inspection; UL 94V-1 and MIL-A-46146	Sealing lids and housings where grooves or other configurations support a flowable material or where limited flow is desired
SE 9189 L Gray or L White RTV	1-part, moderate flow, gray or white, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility; UL V-0	PDP module assembly; parts fixing on circuit board
3-1944 RTV Coating	1-part, moderate flow, translucent, moisture cure RTV	Fast tack-free time; contains UV indicator; UL 94V-0 and MIL-A-46058	Sealing lids and housings where grooves or other configurations support a flowable material or where limited flow is desired
SE 738 White	1-part, nonflow, white, moisture cure RTV	Noncorrosive; general purpose; UL 94HB	Fixing capacitors of coils to circuit board
739 Plastic Adhesive – White		Noncorrosive; general purpose; good adhesion ; UL 94V-0	Wedge bonding or CRT; parts fixing of power supply module
744 RTV Sealant		Noncorrosive; fast tack-free time; general purpose; good adhesion	Bonding of large components such as batteries or capacitors to circuit boards
838 Silicone Adhesive/Sealant		Noncorrosive; general purpose; UL 94HB	Sealing openings in modules and housings; adding mechanical stability to individual components; assembly of components on PWBs; sealing in and around wired and electrical leads; yoke assembly
839 Silicone Adhesive/Sealant	1-part, nonflow, translucent blue, moisture cure RTV	Noncorrosive; general purpose	Sealing openings in modules and housings; adding mechanical stability to individual components; assembly of components on PWBs; sealing in and around wired and electrical leads; yoke assembly
3145 RTV MIL-A-46146 Adhesive/ Sealant – Clear	1-part, nonflow, translucent, moisture cure RTV	Noncorrosive; high tensile strength, elongation, peel and lap shear values, contains UV indicator for automated inspection; MIL-A-46146	Sealing openings in modules and housings; adding mechanical stability to individual components; assembly of components on PWBs; sealing in and around wired and electrical leads; yoke assembly
3145 RTV MIL-A-46146 Adhesive/ Sealant – Gray	1-part, nonflow, gray, moisture cure RTV	Noncorrosive; high tensile strength, elongation, peel and lap shear values, good for high-temperature applications; MIL-A-46146	
3165 Fast Tack RTV Adhesive/ Sealant ¹	1-part, nonflow, gray, moisture cure RTV	Fast tack-free time; noncorrosive; good green strength; good room-temperature adhesion to most substrates; UL 94V-0	
SE 9168 RTV	1-part, nonflow, gray, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility; UL 94V-0	Parts fixing on CRT, circuit board of power supply modules
SE 9184 White RTV	1-part, nonflow, white, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility; thermally conductive; UL 94V-0	Parts fixing on circuit board of power supply modules; heat transmission for electronics parts
SE 9185 Clear or White	1-part, nonflow, translucent or white, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility	Sealing of electronic equipment and modules; parts fixing on circuit board
SE 9188 RTV	1-part, nonflow, gray, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility; UL 94V-0	Parts fixing on CRT, circuit board of power supply modules
SE 9189 White RTV	1-part, nonflow, white, moisture cure RTV	Fast tack-free time; noncorrosive; controlled volatility; UL 94V-0; good thermal conductivity	Parts fixing on circuit board of power supply modules
6-1104 CV Sealant	1-part, nonflow, translucent, moisture cure RTV	Low-volatility space-grade material	Space-grade sealing and adhering
6-1125 CV Sealant	1-part, nonflow, white, moisture cure RTV		

¹Not available in Europe.

PRODUCT INFORMATION (Continued)

Dow Corning® Brand Product	Description	Features	Potential or Typical Uses
Two-Part Room Temperature Condensation Cure			
CY 51-019	2-part, 10:1 mix ratio, white, condensation cure RTV	Noncorrosive; good flow; good adhesion	Solar cell sealing
Q3-6093 RTV Adhesive Kit	2-part, 10:1 mix ratio, black, condensation cure RTV	Noncorrosive; self-priming; rapid room temperature and deep section cure; good green strength; good room-temperature adhesion to most substrates	Sealing lids and housings; attaching baseplates; gasketing
Heat Cure			
Sylgard® 577 Primerless Silicone Adhesive Kit	2-part, 10:1 mix ratio, flowable, gray, heat cure	Noncorrosive; rapid heat cure; self-priming; high strength; UL 94V-0; MIL-PRF-23586F	Sealing lids and housings; attaching baseplates; gasketing, connector sealing
866 Primerless Silicone Adhesive	1-part, flowable, gray, heat cure	Noncorrosive; self-priming; high strength	Sealing lids and housings; attaching baseplates; gasketing, connector sealing
SE 1701 LTV ¹	2-part, 10:1 mix ratio, flowable, beige, heat cure	Noncorrosive; self-priming; high strength	Sealing ceramic condensers; sealing electronic components; bonding agent for key pad of PC
SE 1713 ¹	1-part, flowable, beige, heat cure	Noncorrosive; self-priming; high strength; good adhesion	Sealing lids and housings for ECUs, power modules; fixing electronics parts to circuit boards; reinforcing or fixing parts of connectors
SE 1714 or SE 1714 Black ¹	1-part, flowable, beige or black, heat cure		
SE 1720 CV ¹	2-part, 1:1 mix ratio, white, low void, fast cure, CV grade	Noncorrosive; self-priming; high strength; non-slump	
SE 1750 White ¹	1-part, flowable, white, heat cure	Noncorrosive; self-priming; good strength; good adhesion	Sealing lids and housings for ECUs, power modules; fixing electronics parts to circuit boards; reinforcing or fixing parts of connectors
3-1595 Silicone Adhesive	1-part, thixotropic, gray, heat cure	Self-priming; soft	Sealing lids and housings; attaching baseplates; gasketing; connector sealing; engine control; ABS; transmission; lighting
3-1598 HP	1-part, low void, black, flowable	High-performance version of 3-1598 especially minimizing voids	
3-6265 HP	1-part, low void, black, nonflow	High-performance version of 3-6265 especially minimizing voids	
3-6876 Black Adhesive	1-part, good flow, black, heat cure	Noncorrosive; self-priming; rapid heat cure; high strength; lower viscosity version of Q3-6611 Adhesive	
3-6876 Gray Adhesive	1-part, good flow, gray, heat cure		
96-083 Silicone Adhesive Kit	2-part, 10:1 mix ratio, low viscosity, heat cure	Noncorrosive; self-priming; heat cure; high strength; low viscosity	
EA-6052 Fast Low-Temp Cure Adhesive Kit	2-part, 1:1 mix ratio, moderate flow, black, heat cure	Noncorrosive; rapid low-temperature cure; flowable to allow channel filling; contains UV indicator for automated inspection	Sealing lids and housings; attaching baseplates; gasketing; connector sealing
X3-1598 Adhesive	1-part black heat cure, moderate flow, high strength, similar to Q3-6611 Adhesive with UV indicator, self-priming	Noncorrosive; self-priming; rapid heat cure; high strength; flowable; contains UV indicator for automated inspection	Sealing lids and housings; attaching baseplates; gasketing; connector sealing; engine control; ABS; transmission; lighting
Q3-6611 Adhesive, Black	1-part, moderate flow, black, heat cure	Noncorrosive; self-priming; rapid heat cure; high strength	
Q3-6611 Adhesive, Gray	1-part, moderate flow, gray, heat cure		
Q5-8401 Adhesive Kit	2-part, 1:1 mix ratio, moderate flow, gray, heat cure	Noncorrosive; self-priming; high strength	
EA-6054 Thixotropic Fast Low-Temp Cure Adhesive Kit	2-part, 1:1 mix ratio, nonflow, black, heat cure	Noncorrosive; rapid low-temperature cure; non-slump; contains UV indicator for automated inspection	Sealing lids and housings; attaching baseplates; gasketing; multiple plane dispensing
SE 1700 Clear ¹	2-part, 10:1 mix ratio, nonflow, translucent, heat cure	Noncorrosive; self-priming; high strength	Sealing ceramic condensers; sealing electronic components; bonding agent for key pad of PC
SE 1700 White ¹	2-part, 10:1 mix ratio, nonflow, white, heat cure	Noncorrosive; self-priming; high strength	Sealing ceramic condensers; sealing electronic components; bonding agent for key pad of PC
Q1-9225 Silicone Adhesive Kit	2-part, 10:1 mix ratio, non-slump, white, heat cure	Self-priming; high strength	Sealing ceramic condensers; sealing electronic components; bonding agent for key pad of PC
3-6265 Thixotropic Adhesive	1-part, nonflow, black, heat cure	Noncorrosive; self-priming; rapid heat cure; high strength; non-flowing version of Q3-6611 Adhesive; contains UV indicator for automated inspection	Sealing lids and housings; attaching baseplates; gasketing; connector sealing

TYPICAL PROPERTIES – PHYSICAL

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Dow Corning® Brand Product	One- or Two-Part	Color	Viscosity/Flowability, cps or mPa·sec	Extrusion Rate ¹ , g/min	Durometer	Tensile Strength			Elongation, percent	Specific Gravity
						psi	MPa	kgf/cm ²		
One-Part Moisture Cure RTV										
EA-3000 White	1	White	1,100	NA	18 A	45	0.3	3	100	1.00
SE 9120 Clear	1	Translucent	8,200	NA	23 A	210	1.4	15	420	1.05
SE 9120 S White	1	White	8,200	NA	23 A	210	1.4	15	420	1.05
SE 9152 HT	1	Reddish Brown	11,000	NA	30 A	230	1.6	16	250	1.06
SE 9186 Clear or White	1	Translucent or White	63,000	NA	20 A	300	2.1	21	490	1.04
SE 9186 L Black or L Clear	1	Black or Translucent	25,000	NA	25 A	230	1.6	16	320	1.02
SE 9187 L Black or L Clear or L White	1	Black or Translucent or White	1,100	NA	17 A	60	0.4	4	170	1.00
3140 RTV Coating	1	Translucent	31,000	NA	31 A	450	3.1	32	420	1.03
SE 9189 L Gray or L White RTV	1	Gray or White	22,000	NA	32 A	270	1.9	19	250	1.19
3-1944 RTV Coating	1	Translucent	60,000	NA	29 A	—	—	—	—	1.03
SE 738 White	1	White	Nonflow	—	33 A	360	2.5	25	410	1.05
739 Plastic Adhesive – White	1	White	Nonflow	—	24 A	200	1.4	14	500	1.40
744 RTV Sealant	1	White	Nonflow	—	39 A	380	2.6	27	630	1.40
838 Silicone Adhesive/ Sealant	1	White	Nonflow	220	28 A	230	1.6	16	430	1.02
839 Silicone Adhesive/ Sealant	1	Translucent Blue	Nonflow	220	28 A	250	1.7	18	350	1.02
3145 RTV MIL-A-46146 Adhesive/Sealant – Clear	1	Translucent	Nonflow	110	45 A	940	6.5	66	660	1.10
3145 RTV MIL-A-46146 Adhesive/Sealant – Gray	1	Gray	Nonflow	145	49 A	1030	7.1	72	670	1.11
3165 Fast Tack RTV Adhesive/Sealant ³	1	Gray	Nonflow	200	—	170	1.2	12	180	1.28
SE 9168 RTV	1	Gray	Nonflow	—	46 A	520	3.6	37	300	1.32
SE 9184 White RTV	1	White	Nonflow	—	72 A	420	2.9	30	70	2.22
SE 9185 Clear or White	1	Translucent or White	Nonflow	—	31 A	400	2.8	28	530	1.05
SE 9188 RTV	1	Gray	Nonflow	—	37 A	400	2.8	28	350	1.29
SE 9189 White RTV	1	White	Nonflow	—	73 A	470	3.2	33	60	1.70
6-1104 CV Sealant	1	Translucent	Nonflow	165	42 A	920	6.3	65	610	1.1
6-1125 CV Sealant	1	White	Nonflow	95	46 A	1020	7.0	72	640	1.1

¹Measured at 90 psi (6.2 bar) through a 1/8" (3.18 mm) orifice.

²Cure time: 3-mm thickness, 20°C, 55% MRH.

³Not available in Europe.

Dow Corning® Brand Product	Working Time, RT	RT Tack-Free Time, minutes	Room Temp Cure Time, hr	Heat Cure Time	Unprimed Adhesion Lap Shear			Linear Coefficient of Thermal Expansion, micron/m °C or ppm	Shelf Life from Date of Manufacture, months
					psi	N/cm ²	kgf/cm ²		
One-Part Moisture Cure RTV									
EA-3000 White	—	8	—	—	—	—	—	—	15 at <32°C
SE 9120 Clear	NA	9	24	NA	50	40 (GL)	3.9	—	15 at <32°C
SE 9120 S White	NA	9	24	NA	50	40 (GL)	3.9	—	15 at <32°C
SE 9152 HT	NA	16	24	NA	80	55 (GL)	5.6	—	12 at <32°C
SE 9186 Clear or White	NA	9	48	NA	230	160 (GL)	16.1	—	15 at <32°C
SE 9186 L Black or L Clear	NA	8	48	NA	160	115 (GL)	11.5	—	15 at <32°C
SE 9187 L Black or L Clear or L White	NA	9	48	NA	40	30 (GL)	3.1	—	12 at <32°C
3140 RTV Coating	NA	70	72	NA	—	—	—	315	12 at <32°C
SE 9189 L Gray or L White RTV	NA	9	72	NA	200	140 (GL)	14.4	—	15 at <32°C
3-1944 RTV Coating	NA	13	24	NA	—	—	—	—	12 at <30°C
SE 738 White	NA	100	72 ⁽²⁾	NA	80	55 (AL)	5.7	—	24 at <32°C
739 Plastic Adhesive – White	NA	30	72 ⁽²⁾	NA	140	100 (GL)	10.0	—	15 at <27°C
744 RTV Sealant	NA	30	48	NA	—	—	—	—	12 at <30°C
838 Silicone Adhesive/ Sealant	NA	45	48	NA	140	95	9.8	380	24 at <32°C
839 Silicone Adhesive/ Sealant	NA	35	48	NA	140	95	9.5	300	24 at <32°C
3145 RTV MIL-A-46146 Adhesive/Sealant – Clear	NA	55	48	NA	—	—	—	370	12 at <32°C
3145 RTV MIL-A-46146 Adhesive/Sealant – Gray	NA	75	48	NA	—	—	—	—	12 at <32°C
3165 Fast Tack RTV Adhesive/Sealant	NA	4	24	NA	200	140	14.0	250	12 at <32°C
SE 9168 RTV	NA	6	48	NA	300	210 (GL)	21.4	—	15 at <32°C
SE 9184 White RTV	NA	2	48	NA	300	205 (GL)	20.9	—	7 at <25°C
SE 9185 Clear or White	NA	5	48	NA	210	145 (GL)	14.8	—	15 at <32°C
SE 9188 RTV	NA	9	48	NA	260	180 (GL)	18.4	—	15 at <32°C
SE 9189 White RTV	NA	8	72	NA	250	175 (GL)	18.0	—	15 at <25°C
6-1104 CV Sealant	NA	55	48	NA	220	150	15.5	350	12 at <38°C
6-1125 CV Sealant	NA	50	48	NA	230	160	16.2	350	12 at <38°C

TYPICAL PROPERTIES – PHYSICAL (continued)

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Dow Corning® Brand Product	One- or Two-Part	Color	Viscosity/ Flowability, Mixed or A/B, cps or mPa·sec	Extrusion Rate, ⁴ g/min	Durometer	Tensile Strength			Elongation, percent	Specific Gravity
						psi	MPa	kgf/cm ²		
Two-Part Room Temperature Condensation Cure										
CY 51-019	2	White	11,000	NA	34 A	160	1.1	11	200	1.27
Q3-6093 RTV Adhesive Kit	2	Black	Nonflow	—	42 A	250	1.7	18	220	1.37
Heat Cure										
Sylgard® 577 Primerless Silicone Adhesive Kit	2	Gray	66,000	NA	63 A	950	6.6	67	200	1.29
866 Primerless Silicone Adhesive	1	Gray	47,000	NA	56 A	930	6.4	65	210	1.31
SE 1701 LTV ⁵	2	White	80,000	NA	64 A	1000	6.9	70	200	—
SE 1713 ⁵	1	Beige	80,000	NA	61 A	1070	7.4	75	220	1.25
SE 1714 or SE 1714 Black ⁵	1	Beige or Black	60,000	NA	65 A	1030	7.1	72	250	1.30
SE 1720 CV ⁵	2	White	85,000	NA	—	460	3.2	32	360	1.06
SE 1750 White ⁵	1	White	65,000	NA	66 A	920	6.3	65	120	1.50
3-1595 Silicone Adhesive	1	Gray	570,000	NA	60 OO	240	1.7	17	800	1.06
3-1598 HP	1	Black	86,000	NA	57 A	780	5.4	55	260	1.31
3-6265 HP	1	Black	400,000	NA	71 A	870	6.0	61	150	1.31
3-6876 Black Adhesive	1	Black	37,000	NA	53 A	—	—	—	—	—
3-6876 Gray Adhesive	1	Gray	36,000	NA	54 A	800	5.5	56	260	1.31
96-083 Silicone Adhesive Kit	2	Translucent	9,000	NA	56 A	840	5.8	59	120	1.08
EA-6052 Fast Low-Temp Cure Adhesive Kit	2	Black	41,000/ 51,000	NA	56 A	770	5.3	54	150	1.09
X3-1598 Adhesive	1	Black	84,000	NA	60 A	820	5.7	58	220	1.32
Q3-6611 Adhesive, Black	1	Black	85,000	NA	60 A	840	5.8	59	230	1.31
Q3-6611 Adhesive, Gray	1	Gray	85,000	NA	60 A	850	5.9	60	240	1.31
Q5-8401 Adhesive Kit	2	Dark Gray	120,000/ 63,000	NA	60 A	870	6.0	61	200	1.31
EA-6054 Thixotropic Fast Low-Temp Cure Adhesive Kit	2	Black	290,000/ 300,000	NA	63 A	800	5.5	56	170	1.29
SE 1700 Clear ⁵	2	Translucent	Nonflow	—	46 A	1000	6.9	70	420	—
SE 1700 White ⁵	2	White	Nonflow	—	46 A	1000	6.9	70	420	—
Q1-9225 Silicone Adhesive Kit	2	White	Nonflow	—	46 A	1000	6.9	70	420	—
3-6265 Thixotropic Adhesive	1	Black	Nonflow	85	—	680	4.7	48	180	1.35

⁴Measured at 90 psi (6.2 bar) through a 1/8" (3.18 mm) orifice.

⁵Not available in Europe.

Dow Corning® Brand Product	Working Time, RT	RT Tack-Free Time, minutes	Room Temp Cure Time, hr	Heat Cure Time	Unprimed Adhesion Lap Shear			Linear Coefficient of Thermal Expansion, micron/m °C or ppm	Shelf Life from Date of Manufacture, months
					psi	N/cm ²	kgf/cm ²		
Two-Part Room Temperature Condensation Cure									
CY 51-019	4 hr	NA	24	NA	120	80 (AL/GL)	8.4	—	12 at <32°C
Q3-6093 RTV Adhesive - Kit	32 min	—	1.5	NA	230	160	16.5	285	12 at RT
Heat Cure									
Sylgard® 577 Primerless Silicone Adhesive Kit	>12 hr	NA	NA	60 min @ 125°C	880	605	61.9	300	12 at <32°C
866 Primerless Silicone Adhesive	NA	NA	NA	—	700	480	48.9	360	12 at <30°C
SE 1701 LTV	6 hr	NA	NA	30 min @ 150°C	820	570 (AL)	57.9	—	14 at <30°C
SE 1713	NA	NA	NA	30 min @ 150°C	740	510 (AL)	52.0	—	8 at <10°C
SE 1714 or SE 1714 Black	NA	NA	NA	30 min @ 150°C	750	520 (AL)	53.0	—	9 at <10°C
SE 1720 CV	6 hr	—	—	120 min @ 80°C, 60 min @ 100°C	220	155	15.9	—	9 at <32°C
SE 1750 White	NA	NA	NA	30 min @ 150°C	500	345 (AL)	35.4	—	8 at <10°C
3-1595 Silicone Adhesive	NA	NA	NA	<60 min @ 125°C	230	160	16.3	—	12 at <5°C
3-1598 HP	—	—	—	180 min @ 100°C, 30 min @ 125°C, 15 min @ 150°C	820	570	58.1	275	6 at <5°C
3-6265 HP	—	—	—	35 min @ 100°C, 7 min @ 125°C, 5 min @ 150°C	870	605	61.8	265	6 at <5°C
3-6876 Black Adhesive	NA	NA	NA	—	620	430	43.6	—	12 at <5°C
3-6876 Gray Adhesive	NA	NA	NA	30 min @ 150°C, 60 min @ 125°C	620	430	43.9	—	12 at <4°C
96-083 Silicone Adhesive Kit	—	NA	NA	—	NA	—	—	—	12 at <32°C
EA-6052 Fast Low-Temp Cure Adhesive Kit	304 min	NA	NA	60 min @ 90°C, 30 min @ 125°C, 10 min @ 150°C	730 (AL)	500	51.2	290	12 at <40°C
X3-1598 Adhesive	NA	NA	NA	30 min @ 150°C, 60 min @ 125°C	790	545	55.5	—	12 at <5°C
Q3-6611 Adhesive, Black	NA	NA	NA	—	820	570	58.0	260	12 at <4°C
Q3-6611 Adhesive, Gray	NA	NA	NA	30 min @ 150°C, 60 min @ 125°C	800	550	56.2	255	12 at <4°C
Q5-8401 Adhesive Kit	9 min	NA	NA	90 min @ 120°C	760	530	53.9	—	12 at <50°C
EA-6054 Thixotropic Fast Low-Temp Cure Adhesive Kit	115 min	NA	NA	60 min @ 90°C, 30 min @ 125°C, 10 min @ 150°C	780 (AL)	535	54.6	250	12 at <40°C
SE 1700 Clear	8 hr	NA	NA	30 min @ 150°C	420	290 (AL)	29.5	—	18 at <30°C
SE 1700 White	8 hr	NA	NA	30 min @ 150°C	420	290 (AL)	29.5	—	18 at <32°C
Q1-9225 Silicone Adhesive Kit	8 hr	NA	NA	30 min @ 150°C	420	290 (AL)	29.5	—	12 at <30°C
3-6265 Thixotropic Adhesive	NA	NA	NA	60 min @ 125°C, 30 min @ 150°C	550 (AL)	380	39.0	270	12 at <5°C

TYPICAL PROPERTIES – ELECTRICAL

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Dow Corning® Brand Product	Dielectric Strength		Dielectric Constant			Dissipation Factor			Volume Resistivity, ohm-cm	Agency Listing
	volts/mil	kV/mm	At 100 Hz	At 100 kHz	At 1MHz	At 100 Hz	At 100 kHz	At 1MHz		
One-Part Moisture Cure RTV										
EA-3000 White	475	19	—	—	2.8	—	—	9.00E-04	1.0E+15	NA
SE 9120 Clear	575	23	—	—	2.7	—	—	4.00E-04	7.0E+15	NA
SE 9120 S White	575	23	—	—	2.7	—	—	4.00E-04	7.0E+15	NA
SE 9152 HT	625	25	—	—	2.6	—	—	1.00E-03	3.0E+16	NA
SE 9186 Clear or White	575	23	—	—	2.8	—	—	9.00E-04	2.0E+16	NA
SE 9186 L Black or L Clear	575	23	—	—	2.7	—	—	1.30E-03	6.0E+15	NA
SE 9187 L Black or L Clear or L White	500	20	—	—	2.8	—	—	9.00E-04	3.0E+15	UL 94HB - black only
3140 RTV Coating	445	18	2.52	2.52	—	0.004	0.0010	—	2.1E+14	UL 94V-1/ MIL-A-46146
SE 9189 L Gray or L White RTV	625	25	—	—	3.1	—	—	4.00E-04	9.0E+14	UL 94V-0
3-1944 RTV Coating	425	17	2.67	2.73	—	0.001	<0.0002	—	1.3E+15	UL 94V-0/ MIL-A-46058
SE 738 White	500	20	—	—	2.8	—	—	7.00E-04	3.0E+15	UL 94HB
739 Plastic Adhesive – White	625	25	—	—	3.5	—	—	4.00E-03	2.0E+15	UL 94V-0
744 RTV Sealant	400	16	—	—	—	—	—	—	1.1E+15	NA
838 Silicone Adhesive/Sealant	500	20	2.64	2.63	—	<0.001	0.0010	—	2.2E+15	UL 94HB
839 Silicone Adhesive/Sealant	480	19	2.51	2.49	—	<0.001	<0.0002	—	2.5E+14	NA
3145 RTV MIL-A-46146 Adhesive/Sealant – Clear	500	20	2.83	2.83	—	<0.001	0.0010	—	4.4E+14	MIL-A-46146
3145 RTV MIL-A-46146 Adhesive/Sealant – Gray	500	20	—	—	—	—	—	—	—	MIL-A-46146
3165 Fast Tack RTV Adhesive/Sealant [†]	500	20	2.22	2.38	—	0.003	0.0010	—	2.4E+15	UL 94V-0
SE 9168 RTV	650	26	—	—	3.2	—	—	2.00E-03	8.0E+15	UL 94V-0
SE 9184 White RTV	500	20	—	—	3.9	—	—	2.00E-03	1.5E+15	UL 94V-0
SE 9185 Clear or White	550	22	—	—	2.8	—	—	7.00E-04	2.0E+16	NA
SE 9188 RTV	750	30	—	—	3.4	—	—	3.00E-04	1.0E+15	UL 94V-0
SE 9189 White RTV	800	31	—	—	3.2	—	—	1.40E-03	2.3E+15	UL 94V-0
6-1104 CV Sealant	550	22	2.59	2.58	—	<0.001	<0.0002	—	1.37E+15	NA
6-1125 CV Sealant	550	22	2.62	2.61	—	0.001	<0.0002	—	1.27E+15	NA

[†]Not available in Europe.

TYPICAL PROPERTIES – ELECTRICAL (continued)

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Dow Corning® Brand Product	Dielectric Strength		Dielectric Constant			Dissipation Factor			Volume Resistivity, ohm-cm	Agency Listing
	volts/mil	kV/mm	At 100 Hz	At 100 kHz	At 1MHz	At 100 Hz	At 100 kHz	At 1MHz		
Two-Part Room Temperature Condensation Cure										
CY 51-019	500	20	—	—	3.1	—	—	4.00E-03	4.0E+12	NA
Q3-6093 RTV Adhesive - Kit	500	20	3.38	3.26	—	0.009	0.0026	—	7.3E+14	NA
Heat Cure										
Sylgard® 577 Primerless Silicone Adhesive Kit	500	20	2.83	2.78	—	0.006	0.0004	—	1.3E+15	UL 94V-0/ MIL-PRF-23586F
866 Primerless Silicone Adhesive	500	20	—	—	—	—	—	—	2.0E+15	NA
SE 1701 LTV ¹	725	29	—	—	3	—	—	3.00E-03	1.0E+15	NA
SE 1713 ¹	750	30	—	—	3	—	—	3.00E-03	5.0E+15	NA
SE 1714 or SE 1714 Black ¹	750	30	—	—	3.1	—	—	2.80E-03	5.0E+15	NA
SE 1720 CV ¹	650	26	—	—	2.7	—	—	2.00E-03	3.0E+16	NA
SE 1750 White ¹	700	28	—	—	3.2	—	—	2.00E-03	9.0E+14	NA
EA-6052 Fast Low-Temp Cure Adhesive Kit	575	23	3.06	3.01	—	0.002	<0.0002	—	5.3E+14	NA
EA-6054 Thixotropic Fast Low-Temp Cure Adhesive Kit	550	22	3.08	3.02	—	0.002	<0.0002	—	2.8E+14	NA
3-1595 Silicone Adhesive	—	—	—	—	—	—	—	—	—	NA
3-1598 HP	500	20	3.09	3.03	—	0.006	0.0003	—	4.5E+14	NA
X3-1598 Adhesive	—	—	—	—	—	—	—	—	—	NA
3-6265 HP	600	24	3.14	3.09	—	0.005	0.0019	—	9.2E+14	NA
Q3-6611 Adhesive, Black	350	14	3.09	3.02	—	0.012	0.0038	—	1.6E+14	NA
Q3-6611 Adhesive, Gray	350	14	3.02	2.95	—	0.012	0.0031	—	1.6E+14	NA
3-6876 Black Adhesive	525	21	2.81	2.78	—	0.008	0.0010	—	1.0E+14	NA
3-6876 Gray Adhesive	525	21	2.81	2.78	—	0.008	0.0010	—	1.0E+14	NA
Q5-8401 Adhesive Kit	350	14	—	—	—	—	—	—	8.8E+14	NA
96-083 Silicone Adhesive Kit	450	18	—	—	—	—	—	—	1.7E+15	NA
SE 1700 Clear ¹	550	22	—	—	3	—	—	1.00E-03	5.0E+14	NA
SE 1700 White ¹	550	22	—	—	3	—	—	1.00E-03	5.0E+14	NA
Q1-9225 Silicone Adhesive Kit	550	22	—	—	3	—	—	1.00E-03	5.0E+14	NA
3-6265 Thixotropic Adhesive	525	21	2.94	2.89	—	0.009	0.0010	—	4.7E+14	NA

REVERSION

When two-part condensation curing materials with organotin catalysts, such as *Dow Corning*[®] Q3-6093 RTV Adhesive, are cured in confinement (especially in deep section) and are later subjected to high heat conditions, they can potentially revert from a cured elastomer to a flowable polymer. Although this condition is unusual, parts using two-part condensation cure adhesives should be thoroughly tested in accelerated temperature conditions for this potential limitation.

SOLVENT EXPOSURE

The silicone adhesives discussed in this brochure are intended only to survive splash or intermittent exposures to liquid or vapor solvent or fuel that may occur in an application. These adhesives are not suitable for continuous solvent or fuel exposure. Testing should be done to confirm performance of the adhesives under these conditions.

STORAGE AND SHELF LIFE

Shelf life is indicated by the “Use Before” date found on the product label.

For best results, *Dow Corning* RTV adhesives should be stored at or below 25°C (77°F). Special precautions must be taken to prevent moisture from contacting these materials. Containers should be kept tightly closed with head or

air space minimized. Partially filled containers should be purged with dry air or other gases, such as nitrogen.

Dow Corning heat-cure adhesives should also be stored at or below 25°C (77°C). Containers should be kept tightly closed and kept in cold storage at all times to extend shelf life.

PACKAGING

In general, *Dow Corning* adhesives/sealants are supplied in nominal 0.45-, 3.6-, 18- and 200-kg (1-, 8-, 40- and 440-lb) containers, net weight. Not all products may be available in all packages and some additional packages, such as a bladder packs or tubes, may be available for certain coatings and package sizes.

LIMITATIONS

These products are neither tested nor represented as suitable for medical or pharmaceutical uses.

SAFE HANDLING INFORMATION

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE DOW CORNING

PRIMER SELECTION GUIDE

Detailed information is available in the Primers data sheet, form number 10-909, available from the Dow Corning website (www.dowcorning.com/electronics) or from Dow Corning Customer Service.

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on these products.

<i>Dow Corning</i> [®] brand Primer or Adhesion Promoter	Flash Point, °C (°F)	Volatile Organic Content (VOC) ⁴ , grams/liter	Special Properties	For Use On	For Use With
P5200 Clear ¹	31 (87)	77/522		Most metals, glass, ceramics and some plastics	Pigmented two-part addition cure
1200 Clear	13 (55)	723			
1200 Red	13 (55)	723	Colored for easier identification		
P5200 Red ²	31 (87)	77/521		Most metals, glass and ceramics	All one-part alcohol cure
1204	8 (46)	753			
P5204 ³	14 (57)	205/591		Most plastics	All
1205	13 (55)	862	Film-forming		
3-6060	15 (59)	784	Improves inhibition resistance	Most plastics and metals	All two-part addition cure
92-023	-13 (9)	681		Most metals, glass and ceramics	
<i>Sylgard</i> [®] Prime Coat	-13 (9)	688			

¹P5200 Clear is a low-VOC alternative to 1200 Clear.

²P5200 Red is a low-VOC alternative to 1200 Red.

³P5204 is a low-VOC alternative to 1204.

⁴The lower VOC value is for states and air quality management districts that have recognized volatile methylsiloxanes as VOC exempt.

WEBSITE AT WWW.DOWCORNING.COM, OR FROM YOUR DOW CORNING REPRESENTATIVE, OR DISTRIBUTOR, OR BY CALLING YOUR GLOBAL DOW CORNING CONNECTION.

HEALTH AND ENVIRONMENTAL INFORMATION

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, www.dowcorning.com, or consult your local Dow Corning representative.

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that Dow Corning's products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning's sole warranty is that the product will meet the Dow Corning sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

For More Information

To learn more about these and other products available from Dow Corning, please visit the Dow Corning Electronics website at www.dowcorning.com/electronics.

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